SEAPRINT
Adapting MANPRINT to the Navy

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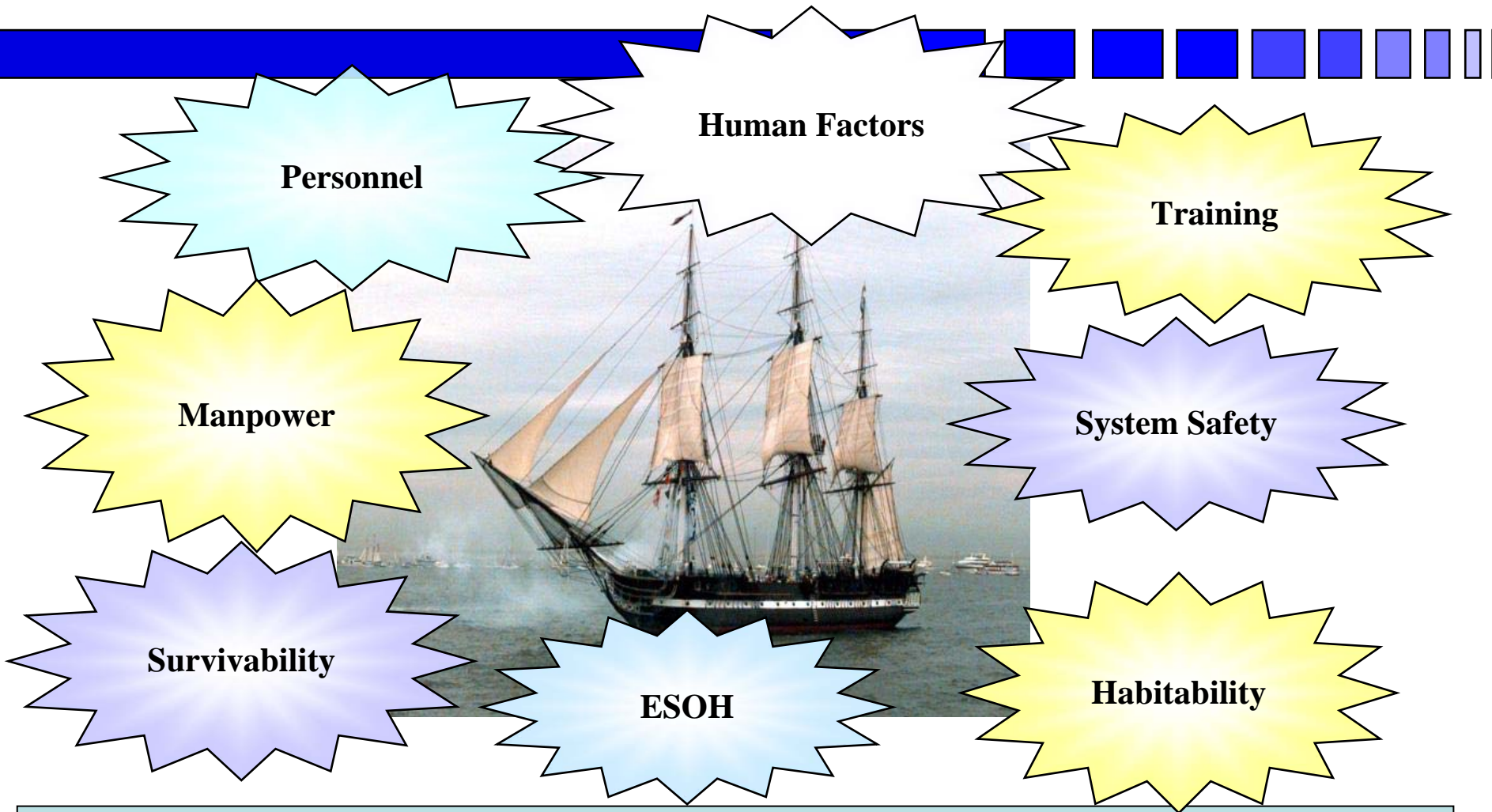
John Owen
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Where we have been…

Personnel

Human Factors

Training

Manpower

System Safety

Survivability

ESOH

Habitability

Different efforts; Different goals; Different processes; Different languages

Congressional Language

2003
Adapt MANPRINT
Apply IMPRINT
Integrate with ongoing Force Management Initiatives

2004
Improve Navy modeling through use of IMPRINT
Address improved job performance, reduced total ownership costs
Continue integrating Manpower and Personnel Tools

2005
More "**JOINT**" flavor
Continue integrating Manpower and Personnel Tools

2006
More "**JOINT**" flavor
Institutionalize and standardize HSI methodologies and modeling tools
Complete DoD-wide review of HSI implementation across acquisitions
Continue Cognitive and physiological research

SEAPRINT
Systems Engineering, Acquisition and PeRsonnel INTegration

- *A **philosophy**, **technical process** and **emerging tool set***
    - Promotes integration and implementation of HSI
    - Begins to standardize requirements/processes across Navy and DoD
    - Identifies existing tools that are relevant and useful for Navy application

- ***Integrates** ongoing initiatives - Sea Warrior, INWF, SkillsNET*

- *Addresses the "**acquisition** piece" of Sea Power 21/Sea Warrior*

- *Supports Strategic Manpower Management (OUSD(P&R) initiative)*
    - Enables measurable, testable requirements definition early in process
    - Provides foundation for requirements assessment (e.g., T&E, M&S)
    - Highlights and manages trade-offs, risks and affordability considerations

SEAPRINT

- ***Philosophy***
  - Sailors are key enabler of operational capability
  - HSI requirements must be design DRIVERS, not consequences
  - Affordability is both dollars and human resources
  - Strategic Manpower Management is required for total system performance and affordability
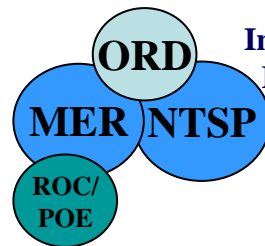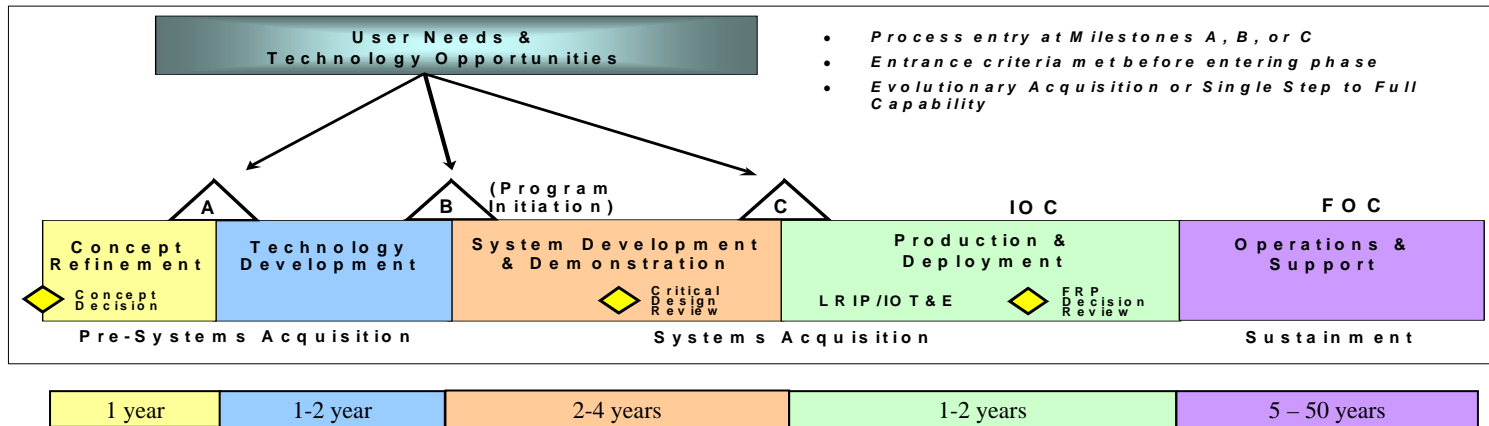
- ***Technical Approach***
  - Integrates new processes (e.g., Sea Warrior, TF) with existing processes (e.g., JCIDS, acquisition, systems engineering)
  - Integrates HSI domain analyses

- ***Emerging Tool Set***
  - Legacy Data sets
  - Modeling tools
  - Process tools

Legacy MPT/HSI Integration

1 year	1-2 year	2-4 years	1-2 years	5 – 50 years

Process entry at Milestones A, B, or C
Entrance criteria met before entering phase
Evolutionary Acquisition or Single Step to Full Capability

ORD
MER **NTSP**
ROC/POE

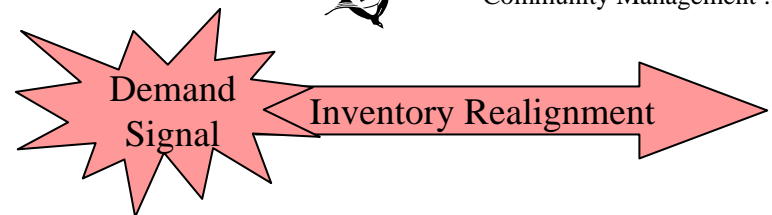**Initial MPT/HSI Requirements**

Doctrine Definition
Training Development
Recruiting
Retention/Bonuses Schedule
Community Management …

Demand Signal — **Inventory Realignment**

TRADE OFFS ARE NOT DECISONS. DEMAND SIGNAL OCCURS LATE.

Where Does SEAPRINT Fit?

Level of Detail –
NOT Hierarchy

**W
H
A
T**

Joint Capabilities Development Integration System
(CJCSI 3170.01D)

Defense Acquisition Process
(DoDI 5000.2)

Navy Acquisition Process
(SECNAVINST 5000.2C)

SEAPRINT
(OPNAVINST 1530.XX)

**H
O
W**

SYSCOM HSI Policy & Guidance

NAVSEA	NAVAIR	SPAWAR
(NAVSEAINST XXX)	*(NAVAIRINST XXX)*	*(SPAWARINST XXX)*

Domain Analysis Policy & Guidance

Manpower & Personnel
(OPNAVINST 1000.16X)

Training
(OPNAVINST 1500.XX)

Habitability
(OPNAVINST 9640.01X)

Safety & Occ Health
(MIL-STD-882D)

SEAPRINT Enterprise Approach

HSI Policy, Processes, Programs & Initiatives

Diagram elements: DoD 5000, MER/TAD, SYSCOM Instructions, SYSCOM Processes, CDD/CPD, JCIDS, Manpower KPP, Revolution in Training, SECNAV 5000, ICD, Evolutionary/Spiral Acquisition, OPNAVINST 1000.16J/1500.76, HSIP, 5VM, Human Performance, Sea Warrior, Affordability, CJCSI 3170, DOTMLPF, NTSP

SEAPRINT
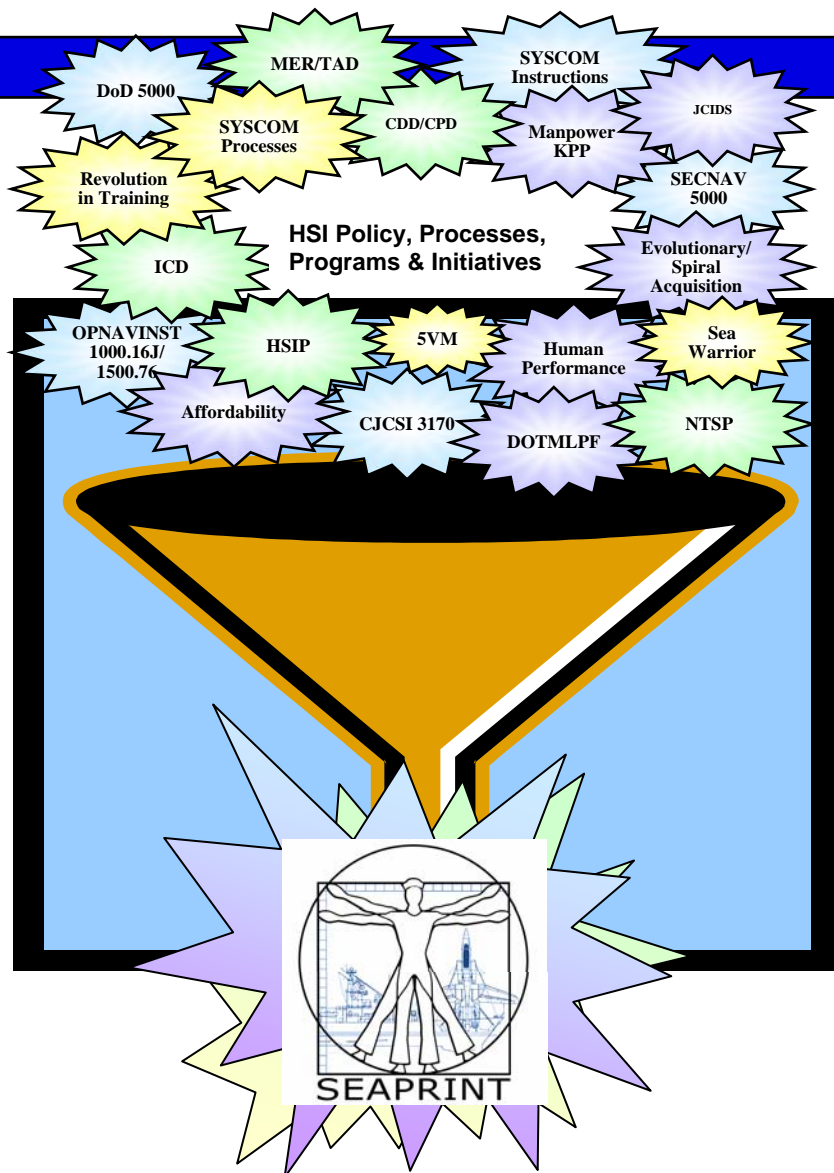
Navy Enterprise Approach to HSI
to addressing DoD and DoN HSI policy processes, programs and initiatives

- Standardizes HSI execution across Navy
- Ensures all aspects of HSI are addressed
- Facilitates HSI analyses

Meets JS/DoD Requirements:
Fulfills Navy's HSI responsibilities in accordance with CJCSI 3170 (series), DoD 5000 (series) and SECNAVINST 5000.2

Program Management & Technical Process:
Integration of human considerations into system acquisition to:

- Enhance human/system design
- Reduce life cycle ownership costs
- Optimize total system performance

Congressional Mandate

SEAPRINT Tenets

7 __Actionable__ Tenets:

1. Initiate HSI early
2. Identify Issues – Plan Analysis
3. Document/Crosswalk HSI Requirements
4. Make HSI a Factor in Source Selection
5. Execute Integrated Technical Process
6. Conduct Proactive Trade-Offs
7. Conduct HSI Milestone Assessments

SEAPRINT Management Process
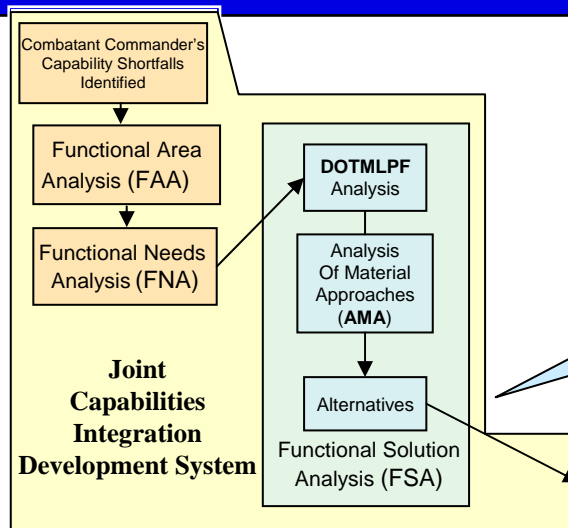
- Integrated technical process
  - HFE tools/analyses as a subset of Systems Engineering
  - Considerations as design drivers, not consequences

- Proactive trade-offs during design
  - Target Audience Description
  - Tools that permit rapid, flexible analyses

- Factor in source selection
  - Distinct major technical and managerial area
  - Ensure HSI continually addressed and evaluated

SEAPRINT Technical Process

SEAPRINT

Combatant Commander's Capability Shortfalls Identified

Functional Area Analysis (FAA)

Functional Needs Analysis (FNA)

Joint Capabilities Integration Development System

DOTMLPF Analysis

Analysis Of Material Approaches (**AMA**)

Alternatives

Functional Solution Analysis (FSA)

## 1. Target Audience and Inventory Assessment

Use data/insights available from HSI community (e.g., SkillsObjects) to guide CONOPS, DOTMLPF analyses, capability definition, technology selection and initial design considerations. **Inputs to TAD, SSMP, AS, ICD, APB, HSIP.**

4. Inventory Realignment and Personnel Delivery

Using Sea Warrior tools, begin aligning the inventory to meet new requirements. Assign workforce as required. Feedback inventory changes and assignments for future concept development. **Inputs to next generation HSIP. Foundation for next generation TAD.**

User Needs & Technology Opportunities

Defense Acquisition Process

A   B (Program Initiation)   C   **IOC**   **FOC**

Concept Refinement	Technology Development	System Development & Demonstration	Production & Deployment	Operations & Support
Concept Decision		Critical Design Review	LRIP/IOT&E FRP Decision Review	

Pre-Systems Acquisition   **Systems Acquisition**   **Sustainment**

2. System Design & Trade Offs

Identify HSI issues. Use HFE to analyze/allocate human functions. Identify design parameters. Determine projected manpower and KSAs for new system. Compare to TAD. Assess current inventory. Determine gaps. Make adjustments/trade-offs. **Inputs to SSMP, HSIP, CDD, TEMP, MER, NTSP.**
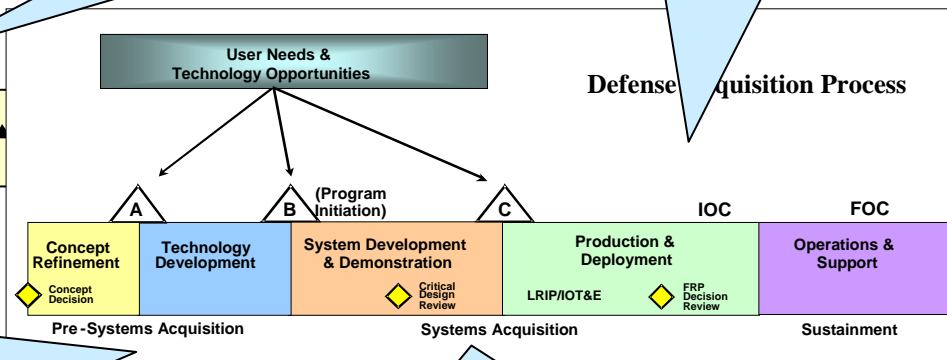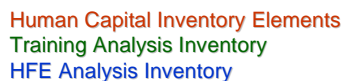
3. Integrated Technical Process

Use HFE to refine system to meet required human performance. Determine final HSI requirements. Identify changes required to realign inventory to meet new needs. **Inputs to SSMP, HSIP, CPD, and updates to MER and NTSP.**
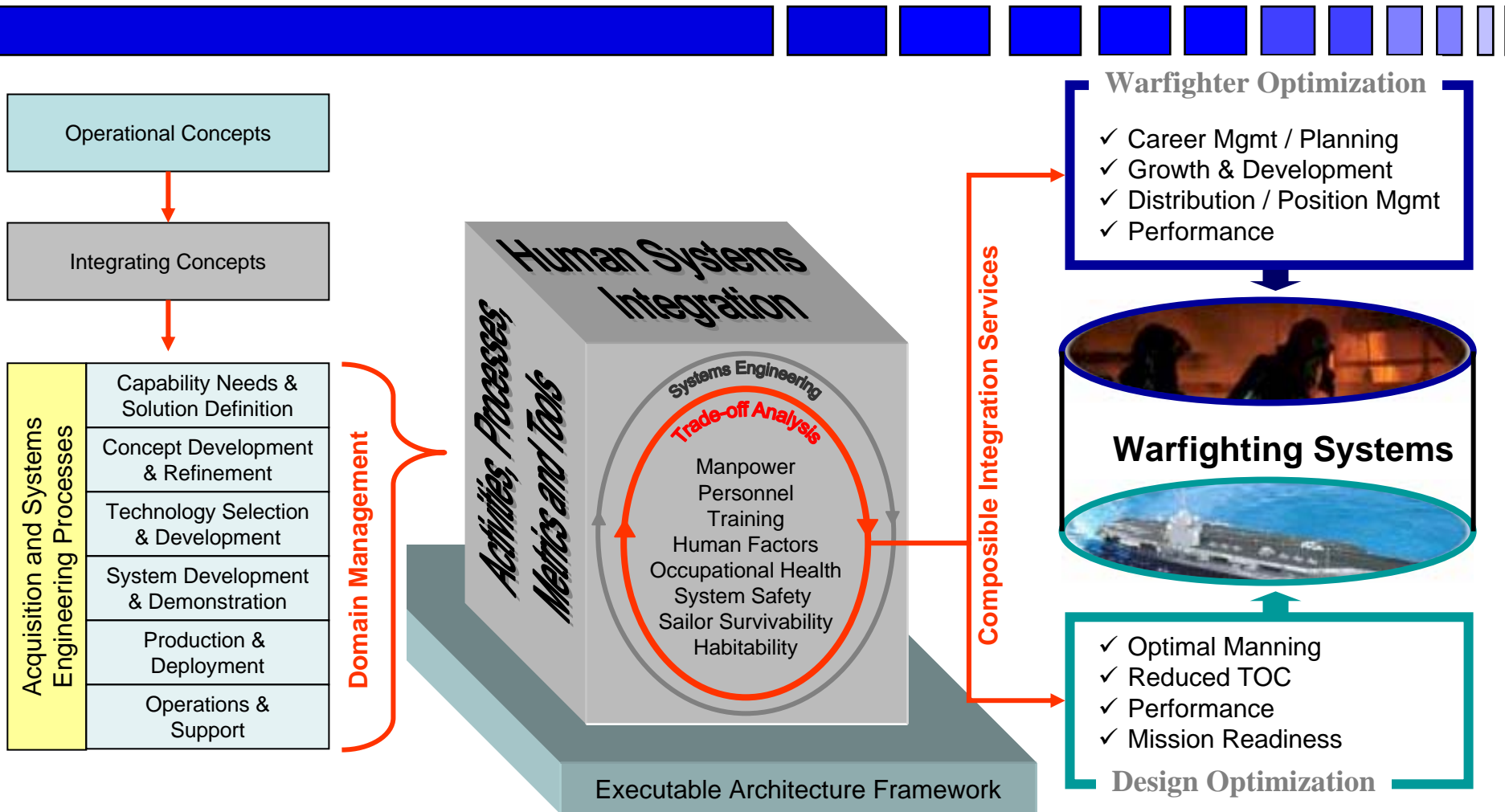
Practice

- Identify HSI issues and constraints
    - ➢ Use SkillObjects as "baseline" when legacy HFE data is unavailable
    - ➢ Use 5VM information to assess inventory potential

- System technology selection, design and trade offs
    - ➢ Use combination of HFE task network modeling and SkillObject data to guide design and make trade offs
    - ➢ Conduct initial "fit-gap" analysis by comparing human performance requirements from HFE task network models to SkillObject inventories

- Inventory realignment
    - ➢ "Fit gaps" identified can be addressed early because of same "format"
    - ➢ Solutions can be begin to be developed sooner since they are based on HFE design data

More than anything – more than data, tools, technology, ontologies, architecture frameworks, etc. – what is required is *INTEGRATION*.

Integrating HSI Domains

JMETL'S

NMETL'S

UMETL'S — Mission

PERFORMANCE

RATING

Position

CWF 1 — CWF 2 — CWF 3 ←→ Function 1 — Function 2

SkillObject 1 — SkillObject 2 — SkillObject 3 — SkillObject 4

Task 1
Task 2
Task 3
Task 4

Enabling KSAT's

Training Analysis

Task Statement 4

Step 1 & Performance Standards
Step 2 & Performance Standards
Step 3 & Performance Standards
Step 4 & Performance Standards

Task Statement

Workload Factors
└TAXONS
├Visual
├Auditory
├Cognitive
└Psychomotor

Stressors

Personnel Characteristics

Mission Performance

KSA's embedded in ASVAB Scores

LEGACY DATA

DESIGN

TAD DATA (Target Audience Document)

Human Capital Inventory Elements
Training Analysis Inventory
HFE Analysis Inventory

The Challenge

Generic Model
Human Capital and HFE Data Element Associations

The Big Picture

SEAPRINT

Operational Concepts

Integrating Concepts

Acquisition and Systems Engineering Processes

- Capability Needs & Solution Definition
- Concept Development & Refinement
- Technology Selection & Development
- System Development & Demonstration
- Production & Deployment
- Operations & Support

Domain Management

Human Systems Integration

Activities, Processes Metrics and Tools

Systems Engineering

Trade-off Analysis

Manpower
Personnel
Training
Human Factors
Occupational Health
System Safety
Sailor Survivability
Habitability

Composible Integration Services

Executable Architecture Framework

Warfighter Optimization

- ✓ Career Mgmt / Planning
- ✓ Growth & Development
- ✓ Distribution / Position Mgmt
- ✓ Performance

Warfighting Systems

- ✓ Optimal Manning
- ✓ Reduced TOC
- ✓ Performance
- ✓ Mission Readiness

Design Optimization
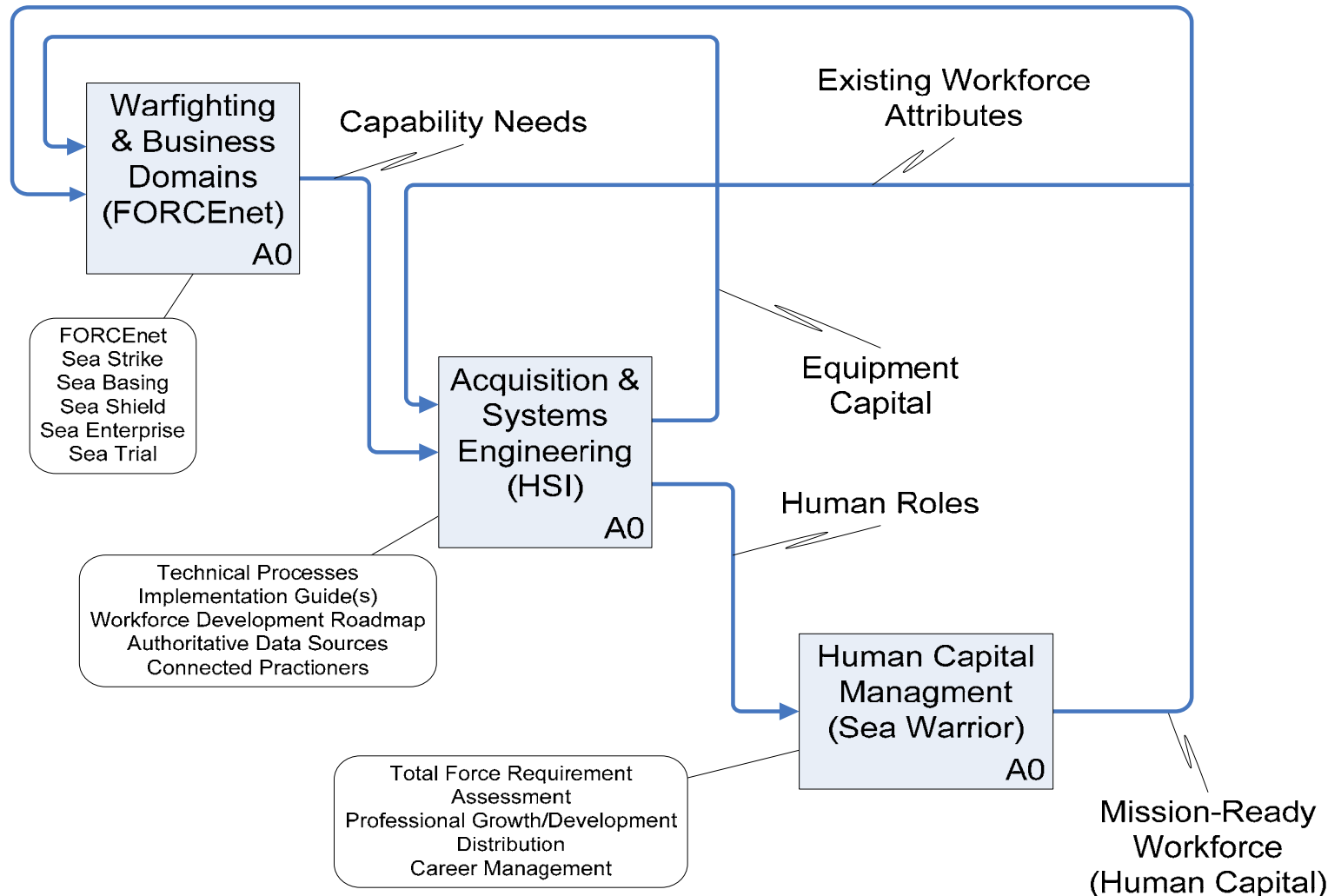
HSI Integrated Architecture

Practicing the Practice

- Begin HSI Early

- Address All Aspects of HSI as Part of DOTMLPF

- Define Measurable and Testable HSI Requirements

- Take a Total Systems Approach – HW, SW & Humans

- Use Analyses to Make Trade-Offs

- Assess Human Performance Throughout the Life Cycle

- Feedback Lessons Learned into Future Acquisitions
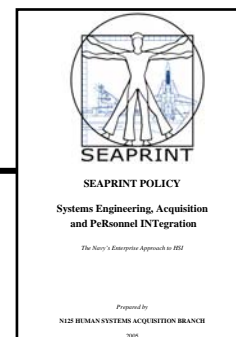
Where are we now?

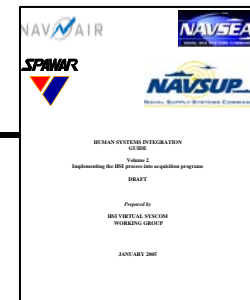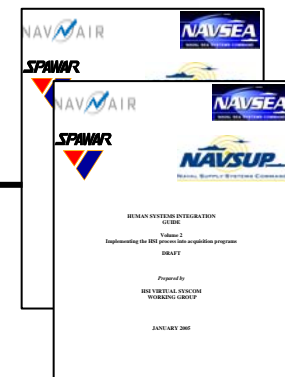| Applicable View	Framework Product	Framework Product Name
All Views	AV-1	Overview and Summary Information
All Views	AV-2	Integrated Dictionary
Operational	OV-1	High-Level Operational Concept Graphic
Operational	OV-2	Operational Node Connectivity Description
Operational	OV-3	Operational Information Exchange Matrix
Operational	OV-4	Organizational Relationships Chart
Operational	OV-5	Operational Activity Model
Operational	OV-6a	Operational Rules Model
Operational	OV-6b	Operational State Transition Description
Operational	OV-6c	Operational Event-Trace Description
Operational	OV-7	Logical Data Model

Complete

In Progress

BPMN

OPNAV N125/N00T, NPDC, HPC, SYSCOMs, FFC

Navy Enterprise Solution and Policy

SEAPRINT POLICY

Systems Engineering, Acquisition and PeRsonnel INTegration

The Navy's Enterprise Approach to HSI

Prepared by
N125 HUMAN SYSTEMS ACQUISITION BRANCH
2005

OPNAVINST 5310

SYSCOM Guidance

HSI Guide Volume I & II

HUMAN SYSTEMS INTEGRATION GUIDE
Volume 2
Implementing the HSI process into acquisition programs
DRAFT

Prepared by
HSI VIRTUAL SYSCOM WORKING GROUP

JANUARY 2005

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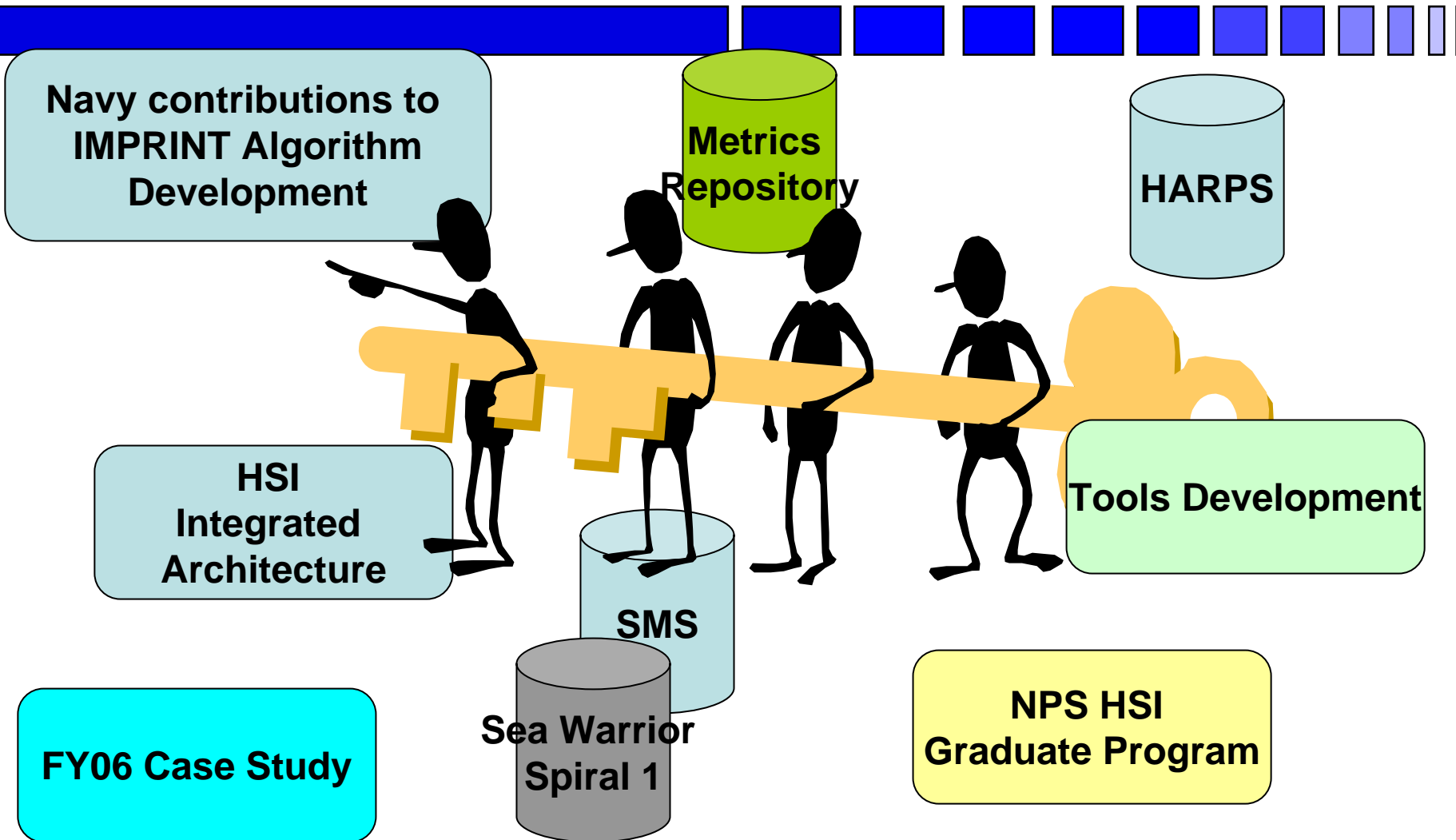**HSI Guide Volume III**

SEAPRINT

- A Complete HSI Program
  - Management Tenets
  - Technical Process
  - Emerging Tool Set

- Integration of Ongoing Initiatives
  - Capabilities-Based Approach
  - Streamlined Acquisition
  - Sea Power 21
  - 5VM

- Standardization of HSI processes across Navy

Where are we going?

Where We Are Going…

NAVY HSI